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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/501,199	02/10/2000	Joseph E Ford	Ford 47-86-61	3528

7590 05/07/2003

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EXAMINER	
LIN, TINA M	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/501,199	Applicant(s) FORD ET AL.	
	Examiner Tina M Lin	Art Unit 2874	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12-19,21 and 22* is/are rejected.

7)☒ Claim(s) *10, 11, and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5-9, 12, 13, 16-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,275,324 B1 to Sneh. Sneh discloses a tunable optical filter with an optical cavity having a determinable length, a tuning device to alter the length of the optical cavity and a filter disabling means to disrupt the transmissibility of the fiber. Sneh further discloses the optical cavity to be defined by two spaced mirrors where one of the mirrors is moveable and tiltable and part of the filter-disabling device. The moveable mirror further comprises a layer over a substrate, a dielectric mirror on the substrate and electrodes. But Sneh fails to specifically disclose the optical cavity length to be determinative of a center transmission wavelength of the passband and the filter-disabling device is an electrically switched media is a quantum well modulator. However, Sneh does disclose a set of electrodes to control the initial cavity spacing. Theses electrodes are examples of finesse and wavelength position control electrodes. Since there electrodes can be controlled by a bias voltage to set the wavelength position depending on the bias voltage, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have placed the voltage at the center

transmission wavelength of the passband. The wavelength can later change due to altering the length of the optical cavity and the filter-disabling device. Furthermore, it would have also been obvious at the time the invention was made to a person having ordinary skill in the art to have used an electrically switched media, such as a quantum well modulator in the filter-disabling device. Modulators are known in the art of fiber optics to alter or modulate wavelengths in order to achieve a different set of wavelengths. Since the filter-disabling device is a means to disrupt the finesse of the optical cavity and a modulator does change or disrupt the wavelengths and transmissibility, an electrically switched media, such as a quantum well modulator would be obvious to use.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,275,324 B1 to Sneh as applied to claim 1 above, and further in view of U.S. Patent 5,283,845 to Ip. Sneh discloses all discussed above in claim 1, but fails to mention a means of an input and an output for receiving a multiplexed signal. Sneh simply discloses the tunable filter. However, Ip discloses a multi-port tunable filter with an optical cavity comprising of two mirrors. Ip further discloses a wavelength division multiplexed signal being received by the optical cavity and outputted from the optical cavity. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have a multiplexed signal being received and outputted from an input and output of the optical cavity. Sneh also fails to disclose a plurality of transmitters for generating optical signals, multiplexers for multiplexing the signals, a node to receive spectral channels and an optical fiber for transmitting the multiplexed signal. However, in applicant's own admitted prior art disclosure and drawings, applicant discloses as prior art transmitters, a multiplexer, node and optical fiber for transmitting

the signal attached to the optical tunable filter. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have added the additional features to the tunable optical filter for the purpose of generating, multiplexing, and receiving an optical signal.

Claims 14, 15 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,275,324 B1 to Sneh as applied to claims 1 and 16 above, and further in view of U.S. Patent 5,103,340 to Dono et al. Sneh discloses all discussed above in claims 1 and 16, but fails to mention the optical cavity to be a ring resonator, the tuning device having an adjustable delay and the filter-disabling device to have an adjustable loss device. However, Dono et al. discloses an optical cavity filter with the ability to change the cavity length. Dono further discloses the optical cavity to resonate at a desired wavelength. By this, Dono implies the optical cavity is a resonator. A ring resonator is a common type of resonator used in the art of optical fibers. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have used a ring resonator in the optical cavity. Furthermore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an adjustable delay in the tuning device and an adjustable loss device in the filter-disabling device in order to more accurately control the inputs and outputs of the system

Allowable Subject Matter

Claims 10, 11, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record fails to disclose or reasonably suggest

a tunable filter with an optical cavity having two mirrors to define the length of the optical cavity, where the movable mirror is bifurcated into an upper and lower moveable layer and an auxiliary gap inbetween. Furthermore, the upper and lower mirror having at least one layer of material with a thickness that has an odd-multiple of an eighth of an operating wavelength of the tunable filter.

Cited Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References D-H all discuss tunable optical filters with a cavity. Each reference discloses different components of the invention and a variety of methods to achieve different wavelengths, cavity lengths and other characteristics.

Joint Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M Lin whose telephone number is (703) 305-1959. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TML TML
April 30, 2003

AKM ENAYET ULLAH
PRIMARY EXAMINER